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NPIC/P&DS/D/6-1491
1 August 1966

MEMORANDUM FOR: Assistant for Photographic Analysis, NPIC

25X1 ATTENTION: [redacted]

25X1 SUBJECT: [redacted] Rear-Projection Viewer Proposal

REFERENCE: IPO/OSB/M-143-66 Memorandum dated 6 May 1966

1. In the referenced memorandum certain questions were raised
25X1 regarding the [redacted] Rear-Projection Viewer Proposal. Since the questions were keyed to the page and paragraph of the proposal text, they will be answered in that same order.

Page 3-3, Paragraph 2. There are no auxiliary film loading controls available; however, since the proposal was written, two changes in the loading operation have been made. Specifically, the joystick control assembly will be removable from the viewer to permit the operator to control the image motion (motion of the film transport assembly) at a distance of up to four feet away from the viewer. Also, the viewer will incorporate semi-automatic film loading features. The operator will simply load the film spool into the transport and attach the end of the film to a device which then transports it through the projection platen to the take-up spool; this special device makes it unnecessary for the operator to remove the film from the threading mechanism. Consequently, once the film is attached to the threading mechanism no further film handling is required. The take-up spool will be automatically adjusted for the various film sizes and the loading time should be reduced to less than thirty seconds for experienced operators.

Paragraph 4. An internal service light will be lighted during the loading operation.

Paragraph 6. A cover panel for the base of the instrument will be provided to prevent any oil from collecting on the floor.

Paragraph 7. For free access to all the elements of the viewer, it is desirable to allow the complete front of the viewer to open. With the optical design that is being employed, critical positioning of the screen is not a necessity and any slight misalignment due to wear will not effect the quality of the image. The screen is tilted, specifically, eleven degrees from the vertical (see the pictures on pages 1-2 and 3-2).

Paragraph 8. The pneumatic mounts are inflated with a conventional tire pump and previous applications have proven that these units are extremely reliable.

Page 3-5. Using the space frame construction concept, there is not sufficient space within the body of the viewer for the Electrical and Cooling Module. The other alternative of building the module into the viewer is reasonably rejected for the reasons listed on page 3-5.

Page 3-6. Because of the large inertias involved in moving the large optical components when the magnification range is changed, it has been recommended that a few seconds be allowed to accomplish this task. The suggested tilt of the screen has been included as discussed above. The request regarding lines/mm is, unfortunately, not within the present optical state of the art. For the suggested increase in resolution an extremely extensive (and expensive) investigation would have to be undertaken with no assurance of ever reaching the goals.

25X1 Page 3-11. [redacted] has tentatively agreed to the inclusion of the suggested X&Y coordinate locator as specified in the referenced memorandum. A detailed description of this device will be forthcoming 25X1 from [redacted]

Page 3-13. A properly designed reel sensor will not scratch clean film. In past designs it has proven to be a simple and reliable device. Not only can the sensor be placed along the edge of the film, but also it is necessary for operation of the end of the reel indicator as discussed below.

Page 3-14 & 15. The "toggle" type switch for focus adjustment will be provided with a positive response. Because of the semi-automatic film threading device, the end of the reel indicator is necessary to prevent the operator from completely unwinding the film from the supply spool. Complete unwinding would require an inconvenient rethreading process.

25X1 Page 4-4 & 5. [redacted] has built and delivered a similar illumination system which does not have the heat problems suspected. 25X1 The development objectives, [redacted] proposal and subsequent documentation, all of which will be made part of the contract, emphatically and unequivocally specify the requirements. The graph on page 4-4 is that of the unfiltered xenon arc spectral energy distribution, which does radiate throughout the spectral range.

Page 4-7. Past experience at [redacted] has proven that no dark rings will appear on the screen as a result of the "Mosaic Rack" condenser system. 25X1

Page 4-8. Several steps have been taken to control the "projected heat." The temperature of the lamp is controlled by both convective and radiative heat transfer through the electrodes of the lamp and forced air cooling provided by the external blowers. Also the illumination is filtered by both the "cold mirror" (and heat sink) and additional heat absorbing filters which are not shown, but can be added almost anywhere in the condenser path. Again, the temperature specifications are clearly outlined in the contract and must be met before the viewer will be accepted.

Page 4-17. At the present time, the LS-60 is the best screen for this application; however, if better screens are later developed, they can easily be substituted for the LS-60.

Page 4-21. Existing viewers suffer from variations in focus between the static and dynamic viewing modes. The approach taken by 25X1 [redacted] is aimed toward a partial solution to this deficiency. The suggested solution in the referenced memorandum of utilizing edge guides to hold the film that within the projection platen present a problem of degraded projection when the imagery is printed to the edge of the film. Again, clean film will not be scratched by this platen and the viewer is so designed that dust will not enter the instrument.

Page 4-22. A calibration grid that is placed in the film plane will not be distorted when projected--regardless of magnification--by more than two percent on the screen as compared to what should be its true geometrical configuration on the screen.

Page 4-26. A separate magnification control will be provided.

Page 4-29. The drive speed range is scaled to the magnification range; however, as on the 25X1 [redacted] Fiber Optic Viewer, the amount of deflection of the joystick determines the relative speed of image motion within any given range. This concept is necessary because of the large magnification range and the image motion sensitivity necessary to be incorporated in the joystick control.

Page 4-33. Each film drive motor has a switch to provide for clockwise or counter-clockwise spindle rotation as described on page 3-13. The film can be viewed either emulsion-up or down whether it is spooled emulsion-in or emulsion-out.

Page 4-35. The top glass platen is removed by simply lifting it out of its holder. This procedure gives direct access to the top of the bottom platen. The underside of this bottom glass will be enclosed within the sealed optical path; therefore, frequent access to this surface will not be necessary.

Page 4-37. The brief starting pulse of the xenon lamp should be shielded to prevent transmission of any stray electronic signals to other equipment.

Page 6-3. The engineering drawings will be retained by this office. A six months supply of parts can be obtained.

2. It is hoped that this fully answers your questions regarding this project. Your evaluation and coordination of this proposal is thoroughly appreciated and if further assistance is needed please contact [redacted] 25X1

[redacted]
Assistant for Plans and Development, NPIC

Distribution:
Original and 1 - Addressee
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25X1 NPIC/P&DS/DB: [redacted] (20 July 66)